



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/453,525	12/03/1999	TATSUZO HASEGAWA	Q56957	2758

7590 11/17/2003
SUGHRUE MION ZINN MACPEAK & SEAS
2100 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 200373202

EXAMINER

GRAHAM, ANDREW R

ART UNIT	PAPER NUMBER
----------	--------------

2644

8

DATE MAILED: 11/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/453,525

Applicant(s)

HASEGAWA ET AL.

Examiner

Andrew Graham

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Art Unit: 2644

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 1, 3, 9-14, and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalb et al (USPN 5939938) in view of Maehara et al (USPN 5834977). Hereafter, "Kalb et al" and "Maehara et al" will simply be referred to as "Kalb" and "Maehara".

Kalb discloses a signal suppression circuit for eliminating transient output noises that appear on an speaker input line during the "power up" and "power down" stages of an audio amplifier. The amplifier circuit includes two speaker amplifiers (102,104), which provide the speaker with a differential input signal (col. 4, lines 19-28). In regards to **Claim 1**, this reads on "a BTL amplifying apparatus having two power amplifiers in an BTL configuration for amplifying a speaker". During a "power up" transient, these amplifiers (102,104) receive and emit a controlled voltage from a designated voltage generator (108) (col. 5, lines 22-24). A bypass

Art Unit: 2644

switch (122) is closed during the initial part of this transient, which effectively prevents the amplifiers (102,104) from outputting the input signal voltage (col. 5, lines 18-22). A comparator (130) holds this switch (122) in its closed, bypassing stage until the voltage generator (108) outputs a voltage that the comparator (130) determines to be higher than a reference voltage (133), at which point the input signal is not longer bypassed (col. 5, lines 34-45). The comparing of the voltage generator (141) voltage and the reference voltage (133) during the period while the input signal is bypassed around the amplifiers reads on "while an input signal to be supplied to the power amplifiers is muted". The comparator (130) and its operation reads on "decision means for deciding" whether or not a certain voltage is "larger than a prescribed voltage".

As can be seen in Figure 2, the second amplifier (104) receives the output of the first amplifier and simply inverts it as an output. Kalb specifically discloses that this amplifier (104) has a gain of one, which means that its output is opposite in sign, but of the same magnitude as the output of the first amplifier (102). As mentioned above, when the bypass switch (122) is closed, the two amplifiers simply output the voltage from the reference generator (141), functioning as voltage followers (col. 5, lines 22-24). Thus, when the signal is being muted and the voltage from the voltage generator (108) is being provided to the comparator (130), this voltage represents not only the inputs to the amplifiers (102,104), but the outputs of the amplifiers as well. Again, it is this voltage that the

Art Unit: 2644

comparator (130) evaluates against the reference voltage (133) in making its output and control decision.

Yet, Kalb does not specify:

- detection means for detecting a differential voltage between outputs from the two power amplifiers
- decision means for deciding whether or not said differential voltage is larger than a prescribed voltage

Maehara discloses an amplifying circuit that includes circuitry for deciding which of two different source voltages to supply to an output speaker. The amplifier arrangement (15) of the output speaker is a balanced transformerless unit (col. 6, lines 36-38). The decision between the two possible supply voltage levels is made using a switching circuit (14) that includes a comparator (14a) with three inputs (col. 6, lines 19-23). This comparator (14a) compares the electric potential between the two amplifier output lines and a reference voltage, and makes the change between the two supply voltages when the potential exceeds the voltage level of the reference voltage (col. 6, lines 23-31). The comparator's determining of the voltage potential between the amplifier unit's outputs (15) reads on "detection means for detecting a differential voltage between outputs from the two power amplifiers". The comparison made by this comparator and the subsequent controlling of the switch between the two source voltages reads on "decision means for deciding whether or not said differential voltage is larger than a prescribed voltage".

Art Unit: 2644

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to substitute the comparator system of Maehara for the comparator system in the invention of Kalb. Such a modification would have been desirable because using the voltages directly supplied to the speaker would have taken any discrepancies in the voltage follower circuits into account in the decision making process. Such accuracy would have enhanced the degree of control a user would have had in using such a system.

Regarding **Claim 3**, the system of Kalb specifically operates during the "power on" and "power off" transient periods of the audio amplifier system, which reads on "detection means and decision means are operated when a power switch is turned on or a signal source is selected" (col. 4, lines 60-67 and col. 5, lines 1-18).

Regarding **Claim 9**, please refer to the like teachings of Claim 1, noting the "at least indirectly" input connection schemes of Kalb. Regarding **Claim 10**, please refer to the like teachings of Claim 1, noting the muting discussed in regards to the Kalb reference for when voltages are being compared. Regarding **Claim 11**, please refer to the like functioning and configuration of the system of Kalb discussed in regards to Claim 1. Regarding **Claim 12**, again, please refer to the like teachings of Claim 1, noting the muting discussed in regards to the Kalb reference for when relative voltages are being compared. Regarding **Claims 13 and 14**, please refer to the like functioning and configuration of the system of Kalb discussed in regards to Claim 1.

Art Unit: 2644

Regarding **Claim 16**, please refer to the like teachings of Claim 1 and 3, noting the functioning of the comparators of Kalb and Maehara.

2. **Claims 2, 4, 15, 17, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalb in view of Maehara as applied to claims 1 and 3 above, and further in view of well-known prior art.

As detailed above, Kalb discloses a signal suppression circuit for eliminating transient output noises that appear on an speaker input line during the "power up" and "power down" stages of an audio amplifier. Maehara discloses an amplifying circuit that includes circuitry for making control decisions based on the comparison between a reference voltage and two voltages supplied to an output transducer. Regarding **Claim 2**, Kalb discloses the making of resistors variable and the related possibility of giving the amplifiers a controllable gain (col. 9, lines 46-64). Such a modification would have involved making the resistor (120) that provides the feedback across the first amplifier (116) variable. This would have altered the signal level provided to the speakers and reads on "volume means". As detailed above, the switching circuit (122) provides a bypass which, in combination with reference voltage (141), prevents the input signal from being amplified by the first amplifier (102). The switching circuit and the corresponding connections read on "muting means for

Art Unit: 2644

muting the input signal to be supplied from said volume to the power amplifiers during a prescribed period".

Yet, Kalb in view of Maehara does not specify:

- that the volume means adjusts the input signal level that is applied to the amplifiers

However, Examiner takes Official Notice that various types and arrangements of volume control device are well known in the art. This includes placing a volume control device between the input signal and first amplifier, which reads on "volume means for adjusting a signal level of said input signal to the amplifiers".

It would have been obvious to one of ordinary skill in the art at the time the invention was made to insert a volume control device as detailed above into the system of Kalb in view of Maehara. Such a modification would have been desirable because it would have enabled the user to selectively control the voltage level of the input signal supplied and then amplified by the amplifier units.

Regarding **Claim 4**, the volume control means of Kalb discussed in regards to Claim 2 involves adjusting the volume levels by adjusting the involved resistances of the circuit. The volume control device discussed in regards to the Official Notice taken above would have inherently functioned in a same or similar voltage-adjusting manner, which reads on "said volume means is an electronic volume".

Regarding **Claim 15**, please refer to the like teachings of Claim 2, noting that the period between the initialization of the system and

Art Unit: 2644

the point at which the reference voltage is exceeded in the system of Kalb, wherein the charging of the primary reference voltage can be controlled by the values of the components used therein, reads on "a predetermined length of time" (col. 11, lines 5-20).

Regarding **Claim 17**, please refer to the like teachings of Claim 4.

Regarding **Claim 21**, please refer to the like teachings of Claims 15 and 18.

3. **Claims 5-8 and 18-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalb in view of Maehara as applied to claims 1-4 above, and further in view of Seki et al (USPN 4414514). Hereafter, "Seki et al" will be simply referred to as "Seki".

As detailed above, Kalb discloses a signal suppression circuit for eliminating transient output noises that appear on an speaker input line during the "power up" and "power down" stages of an audio amplifier. Maehara discloses an amplifying circuit that includes circuitry for making control decisions based on the comparison between a reference voltage and two voltages supplied to an output transducer. The system of Kalb includes a control signal line for selectively disabling the operation of the amplifiers of the system, but this control line is only used in correspondence with the powering up/down of the chip on which the overall circuit is located.

Thus, Kalb in view of Maehara does not specify:

Art Unit: 2644

- activation/deactivation means for activating/deactivating the power amplifiers when a detected voltage differential exceeds a prescribed value

Seki discloses a two signal amplifying system that includes circuitry that protects a speaker against an undesired input signal. This circuitry includes detectors (7,7') that monitor the outputs of the amplifiers (1,1'), a retention circuit (8), and a control circuit (9) (col. 3, lines 7-42). The control circuit (9) is connected to the amplifiers (1,1') and renders the amplifiers (1,1') nonconductive when the amplifiers' operation deviates from a predetermined range (col. 3, lines 33-42). The control circuits read on "activation/deactivation means for activating/deactivating the power amplifiers" and their operation reads on "deactivates said power amplifiers when it is decided that the differential voltage is larger than said prescribed value by the decision means".

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to add the enable/disable circuitry and components of Seki to the system of Kalb in view of Maehara. The motivation behind such a modification would have been that the added circuitry would have provided protection for the speakers against unwanted ranges of input signals. Particular motivation for this particular type of protection circuitry would have been that, in view of the modifications previously discussed, the required input values would have already been available for the protection circuitry.

Art Unit: 2644

Regarding **Claim 6**, the control circuit (9) disables the output of the amplifiers (1,1') by directing the output transistors (Q_{10}, Q_{10}') into their non-conductive states (col. 3, lines 34-42). Transistors are a type of switch. Thus, these transistors and their responsiveness to the control signal read on "switches connected between the output terminals from said power amplifiers and the speaker, wherein switches are turned off when it is decided that the difference voltage is larger than said prescribed value".

Regarding **Claim 7**, the control means (9) disable the output of the speaker amplifiers (1,1') when a output voltage is detected that is outside a predetermined range (col. 3, lines 34-42). This means that the speakers would have ceased outputting a signal during the times of a detected invalid signal range. According to Seki, these intermittent interruptions would have indicated to a user that an abnormal speaker operating condition has been determined, and prompted the user to check the connections of the speaker system (col. 8, lines 48-55). Thus, the disabling abilities of the control circuit (9) read on "warning means for giving a warning when it is detected that said differential voltage is larger than said prescribed value by said decision means".

Regarding **Claim 8**, please refer to the like teachings of claims 1, 2, and 5, noting that the bypass switch (122) of Kalb is returned to an open position and allows the input signal to be emitted by the amplifiers (102,104) after the period during which the output voltage of the voltage generator is less than that of a reference voltage.

Art Unit: 2644

Regarding **Claim 18**, please refer to the like teachings of Claim 5. Regarding **Claim 19**, please refer to the like teachings of Claim 6.

Regarding **Claim 20**, please refer to the like teachings of Claim 7.

Response to Amendment

4. The amendment filed September 10, 2003 is sufficient to overcome the previous objection made in regards to the specification. Said objection is hereby withdrawn.

In view of the applicant's remarks and amendments to Claims 4 and 8, the previous rejections made under 35 U.S.C. 112. However, regarding Claim 4, the applicant should be advised that the phrase "electronic volume" has been interpreted as broadly and appropriately as such claim language permits.

Response to Arguments

5. Applicant's arguments filed September 10, 2003 have been fully considered but they are not persuasive.

On page 9, lines 9-10, the applicant has stated, "the comparator 14a determines the difference between a voltage V_A (at point A in Fig. 3) and a reference voltage V_{ref} ". The applicant further maintains that the "comparator 14a does not determine a differential voltage between output of amplifiers 15A and 15B as the Examiner maintains". The examiner respectfully disagrees. In column 6, lines 19-31, Maehara refers to V_A as an electric "potential", not an electric "voltage". An

Art Unit: 2644

electric potential is the charge measured at a certain point in the system with respect to another point in the system. In the system of Maehara, the speaker is not grounded and this "potential" is the charge across the speaker, determined in reference to the voltage at point A in comparison with the same amplifier-relative location on the output line of the second amplifier (15B). This is why both the outputs of amplifiers 15A and 15B are supplied to the comparator (14a) and not just the line that is connected to the designated point A in Figure 3. In such an amplifier configuration, it is this difference between the output of the amplifiers (15a,15b), not just the voltage at the amplifier (15a) that receives the original input signal, that determines the final output audio signal that it is emitted by the speaker. In other words, the comparator (14a) has to know the difference between these two signals in order to know about the level of the final output signal, the concept of which is the basis for this part of the previously made rejection.

On page 9, lines 14-15, the applicant has stated, "the V_{cc} in '977 is not muted, as claimed in Claim 1". However, the examiner respectfully notes that the '977 reference was not relied upon or even discussed in regards to the "while muted" aspect of the claim in the initial office action. Lines 1-9 of the fifth page of the previous office action cite the Kalb reference as disclosing the concept of muting an output signal while the relevant decision making process is being performed. The Maehara reference is included in the rejection

Art Unit: 2644

of Claim 1 because of how its particular comparator scheme functions, not when or under what conditions such a comparison is made.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is (703) 308-6729. The examiner can normally be reached on Monday-Friday (7:30-4:30), excluding alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen, can be reached at (703) 305-4386. The fax number for the organization where this application or

Art Unit: 2644

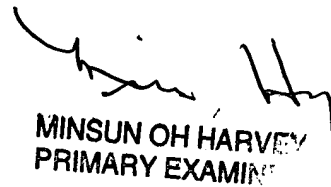
proceeding is assigned is 703-872-9314 for regular communications, and 703-872-9315 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



Andrew Graham
Examiner
A.U. 2644

ag
November 12, 2003



MINSUN OH HARVEY
PRIMARY EXAMINER